



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/563,941

01/10/2006

Elena Costa

1454.1660

3628

21171 7590 11/09/2009
STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

AJIBADE AKONAI, OLUMIDE

ART UNIT

PAPER NUMBER

2617

MAIL DATE

DELIVERY MODE

11/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--|-------------------------------------|--|
| Office Action Summary | Application No. 10/563,941 | Applicant(s) COSTA ET AL. | |
| | Examiner OLUMIDE T. AJIBADE AKONAI | Art Unit 2617 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17, 18, 21-28, 30 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30 and 32 is/are allowed.
- 6) ☒ Claim(s) 17, 18, 21-25 and 28 is/are rejected.
- 7) ☒ Claim(s) 26 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claims 17, 18, and 21-28, is withdrawn in view of the newly discovered reference(s) to Patent No. 7,328,034. Rejections based on the newly cited reference(s) follow.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 17, 18, 21-25 and 28 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 7,328,034 in view of **Yamada et al 20020105918 (hereinafter Yamada)**.

| <u>Claim 1 of U.S. Patent 7,328,034</u> | <u>Claim 17 of Instant Application 10/563,941</u> |
|--|--|
| Claim 1 recites a method for synchronizing a radio communication system divided into radio cells, comprising: | Claim 17 discloses a method for synchronizing a radio communication system divided into radio cells |
| transmitting data using a multiple access method, each radio cell having a base station for providing radio coverage to a plurality of mobile stations assigned to the radio cell and the base station; | transmitting data using a multiple access methods, each radio cell having a base station for radio provisioning mobile stations assigned to the radio cell, comprising: |
| selecting a pilot channel at each base station and transmitting the pilot signal to the mobile stations assigned to the base stations; | receiving at the mobile station of the radio cell, base station signals of the radio cell and adjacent radio cells |
| transmitting the received pilot signal to the base station from the mobile stations assigned to the base stations, in an uplink transmission; receiving at the base station pilot signals from the mobile stations assigned to the base stations and pilot signals assigned to adjacent radio cells; | receiving at the base station of a radio cell, mobile station signals of the radio cell and adjacent radio cells |
| and using the pilot signals received to determine a synchronization value for a time synchronization and/or a frequency synchronization, to which the base station synchronizes itself. | determining, from the mobile station signals received at the base station, a first synchronizing value for at least one of time synchronizing and frequency synchronizing, to which the base station synchronizes itself |
| Claim 2: the method according to claim 1 wherein at least one of the mobile stations receives pilot signal from the base station to which the mobile station is assigned and receives pilot signals from base stations | receiving at the mobile station of the radio cell, base station signals of the radio cell and adjacent radio cells |

| | |
|---|--|
| of adjacent radio cells, and | |
| the mobile station uses the received pilot signals to determine a synchronization value for time synchronization and/or frequency synchronization, to which the mobile station synchronizes itself. | determining from the base station signals received at the mobile station, a second synchronizing value for at least one of time synchronizing and frequency synchronizing. |

Claims 1 and 2 of U.S. Patent 7,328,034 does not disclose employing timeslots of commonly assigned carrier frequencies as radio transmission resources, wherein at least two adjacent base stations simultaneously and jointly employ a timeslot of a carrier frequency for radio provisioning a respectively assigned mobile station; and selecting the timeslot from the commonly assigned radio transmission resources taking account of an interference situation in the timeslot.

Yamada however discloses a method comprising employing timeslots of commonly assigned carrier frequencies as radio transmission resources, wherein at least two adjacent base stations simultaneously and jointly employ a time slot of a carrier frequency for radio provisioning a respectively assigned mobile station (MS2 in cell 2 and MS1 in cell 1 are assigned the same timeslot to use for communication, see figs. 1-4, p.3-4, [0044]-[0045]); and selecting the time slot from the commonly assigned radio transmission resources taking account of an interference situation in the time slot (selecting another time slot or decreasing communication speed at a timeslot allocated to MS1 and MS2 if there is interference that leads to a deterioration in communication, see figs. 1-4, p. 3-4, [0044]-[0046]).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine teaching of Yamada into the system of Costa as disclosed in claims 1 and 2 of U.S. patent number 7,328,034 by allocating the same time slot to two base stations in adjacent cells based on interference information associated with the time slot for the benefit of providing improved communication quality among mobile stations in adjacent/adjoining cells.

| <u>Claim 18 of U.S. Patent 7,328,034</u> | <u>Claim 28 of Instant Application 10/563,941</u> |
|---|--|
| Claim 18 recites base station assigned to a radio cell for synchronizing a radio communication system divided into radio cells, comprising: transmission means for transmitting data using multiple access method, the data being transmitted to a plurality of mobile stations assigned to the radio cell of the base station | Claim 28 discloses a base station in a radio cell of a radio communication system divided into radio cells transmitting data using multiple access methods, for radio provisioning mobile stations assigned to the radio cell, comprising: |
| receiving at the base station pilot signals from the mobile stations assigned to the base stations and pilot signals assigned to adjacent radio cells; | a receiver receiving signals of the radio cell and adjacent cells |
| synchronization means to synchronize the base station using pilot signals received and a determined time synchronization and/or frequency synchronization value. | a processor determining from the mobile station signals, a synchronizing value for at least one of time synchronizing and frequency synchronizing to which said base station synchronizes itself. |

Claim 28 of U.S. Patent 7,328,034 does not disclose and utilizing timeslots of jointly assigned frequencies of an adjacent base station as radio transmission resources

Art Unit: 2617

wherein the base station and the adjacent base station simultaneously and jointly employ a timeslot of a carrier frequency for radio provisioning a respectively assigned mobile station; and selecting the timeslot from the commonly assigned radio transmission resources taking account of an interference situation in the timeslot.

Yamada however discloses and utilizing time slots of jointly assigned carrier frequencies of an adjacent base station as radio transmission resources wherein the base station and the adjacent base station simultaneously and jointly employ a time slot of a carrier frequency for radio provisioning of the mobile station (MS2 in cell 2 and MS1 in cell 1 are assigned the same timeslot to use for communication, see figs. 1-4, p.3-4, [0044]-[0045]), and selecting the time slot from the commonly assigned radio transmission resources taking account of an interference situation in the time slot (selecting another time slot or decreasing communication speed at a timeslot allocated to MS1 and MS2 if there is interference that leads to a deterioration in communication, see figs. 1-4, p.3-4, [0044]-[0046]).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine teaching of Yamada into the system of Costa as disclosed in claim 18 of U.S. patent number 7,328,034 by allocating the same time slot to two base stations in adjacent cells based on interference information associated with the time slot for the benefit of providing improved communication quality among mobile stations in adjacent/adjoining cells.

Regarding **claim 18** as applied to claim 17, Yamada further discloses wherein the adjacent base stations employ radio transmission resources from a stock commonly

Art Unit: 2617

assigned to the base stations for data transmission (assigning same transmission timeslots in the first cell and adjacent second cell, see p.3, [0043]).

Regarding **claim 21** as applied to claim 17, Yamada further discloses synchronizing by at least one of the base station and mobile by adjusting carrier frequencies and timeslot-transmitting instants (allocating another time slot, see p.4, [0044]).

Regarding **claim 22** as applied to claim 21, Yamada further discloses reducing co-channel interference on at least on of the base station and mobile station by interference suppression methods (allocating another time slot, see p.4, [0044]).

Regarding **claim 23** as applied to claim 22 Yamada further discloses assigning radio transmission resources on the base station side to minimize co-channel interference in adjacent radio cells (see p.4, [0045]-[0046]).

Regarding **claim 24** as applied to claim 23 Yamada further discloses wherein an orthogonal frequency division multiplexing method is employed (p.3, [0036]).

Regarding **claim 25** as applied to claim 23 Yamada further discloses wherein one of a time-division duplex and frequency-division duplex method is employed (p.3, [0036]).

Allowable Subject Matter

4. Claims 30 and 32 are allowable for the reasons indicated in the office action mailed April 3, 2009.

Claims 26 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Teder et al 5,828,659 discloses time alignment of transmission in a down-link of CDMA system.

Iseyama 5,787,346 discloses radio channel assignment method.

Dick et al 20030147362 discloses a method and apparatus for synchronizing base stations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2617

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

/Charles N. Appiah/
Supervisory Patent Examiner, Art Unit 2617